

## Bottcher, Helen

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**From:** (b) (6)  
**Sent:** Friday, June 24, 2016 11:17 PM  
**To:** Skadowski, Suzanne  
**Cc:** wyckoffcomments  
**Subject:** (b) (6) Wyckoff Comment #2

### Comment #2 to EPA from (b) (6)

Below are two responses from the EPA to questions I previously posed in May 2016 regarding the estimated duration of performance of the cement stabilization/solidification ("ISS") remedy proposed in the April 2016 FFS.

I believe that it is incumbent upon the EPA and their contractor to present an estimated duration, the complexity of such an estimate notwithstanding, particularly in light of the fact that this remedy requires \$80M of taxpayer money. The contractor should present performance calculations and the attendant assumptions. The contractor should also draw from other sites where ISS was used in coastal environments, even if the volume and depth of contamination at those sites, if applicable, were not as deep or as large.

**From:** "Helen Bottcher" <[Bottcher.Helen@epa.gov](mailto:Bottcher.Helen@epa.gov)>  
**To:** (b) (6) "ken scheffler" <[ken.scheffler@ch2m.com](mailto:ken.scheffler@ch2m.com)>, "Beth Sheldrake" <[sheldrake.beth@epa.gov](mailto:sheldrake.beth@epa.gov)>  
**Sent:** Wednesday, May 18, 2016 9:03:12 AM  
**Subject:** RE: Ken, Beth and Helen: Did You Receive This Request Sent Yesterday? Please Advise. Thanks. Malcolm

Hello Malcolm.

In response to your first question, we don't have an estimate of the how long the in-situ solidification portion of the remedy will remain intact. Where ISS has been used at other EPA sites, the remedies have remained protective since they were constructed, but that provides only 15 or 20 years of data. I've attached an EPA technology review and a more detailed review conducted at an MPG site in Georgia. At the site in Georgia, the ISS mass continued to gain strength over 10 years, suggesting very good long term performance.

EPA believes that ISS at the Wyckoff site would remain protective for a very long time. Concrete is durable over decades, even when exposed to the elements. In this case, the treated soil monolith will be protected behind the perimeter wall and under the final upland cap. Under these circumstances, **we expect it to last well beyond the 100 year O&M period** considered in our evaluation. When the concrete does start to break down, we don't expect it to just disintegrate. The failure mode would likely be cracking or degradation around the edges of the monolith. Cracking would increase the surface area of the monolith. Along newly exposed faces, contaminants could leach into the groundwater. But we don't expect the monolith to release NAPL, even when it cracks – after ISS, the contamination will no longer be present as a separate phase product.

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**From:** "Hun Seak Park (ECY)" <[HPar461@ECY.WA.GOV](mailto:HPar461@ECY.WA.GOV)>  
**To:** (b) (6)

**Cc:** "Ken Scheffler" <Ken.Scheffler@CH2M.com>, "Helen Bottcher" <Bottcher.Helen@epa.gov>, "Hun Seak Park (ECY)" <HPar461@ECY.WA.GOV>  
**Sent:** Wednesday, May 18, 2016 3:01:14 PM  
**Subject:** RE: Small Request

Hi Malcom,

Good to communicate with you again here over the email.

Annual budget we have allocated for the operation/maintenance (labor + parts repairs/replacement + disposal of waste products collected + routine maintenance + contingency, etc.) of Wyckoff Plant is right about \$850k. Actual expenditure is slightly less than that.

**I do not think there is any place in FFS to discuss about the life-span of ISS** (immobilizing NAPL in a cement/bentonite -type matrix). Cement itself is a very strong chemical binding material through chemical reaction. Like many ancient huge dome structures in Rome, which were made from concrete (cement-mixture) are still standing till now. Portland cement is hydraulic cement. Once it is cured under optimal condition, it becomes sparingly soluble and standing so long even under the salty water condition. I do not think you are really concerned about the breakability of this cement structures (ISS) to be constructed below ground. Rather we all are more concerned about leachability when NAPL becomes stabilized with cement/bentonite. Through the bench-scale testing, EPA will find the most optimum design conditions of ISS technology to meet the Remedial Action Objectives stated in draft PP.

One note about your preference on the use of thermal desorption/extraction technology of top (partial) portion of NAPL residual..... Without knowing the detail of you proposal I do not think it will work due to the huge cross-contamination issue of the cleaned top portion of dirt. I will be very interested to see your alternative.

Thanks for your concerns.

Hun Seak Park, P.E.  
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-----Original Message-----

From: (b) (6)

Sent: Wednesday, May 18, 2016 1:22 PM

To: Park, Hun Seak (ECY) <HPar461@ECY.WA.GOV>  
Subject: Small Request

Hello Mr. Park:

It was nice to meet you at the RITS Conference last week.

Two questions:

- 1) What is Ecology's annual budget to run the groundwater treatment system at Wyckoff? I don't need the exact amount - an estimate is fine; is it about \$1M/year?
- 2) You mentioned that you thought the selected remedy of insitu solidification/stabilization at Wyckoff would last 100-200 years. Could you please tell me where that is written and send me the documented estimate?

Thank you very much.

Sincerely

Malcolm Gander

Sent from my iPhone